



Taibah University
College of Pharmacy
Pharmacology I (PHT-371)
Practical Part
First Term
1443/2021

Experiment 1: Animal Handling

Introduction:

Experimental animals are used to test the effect of drugs before their introduction to clinical trials. In addition, they are used in educational institutions to demonstrate different effects of drugs for teaching purposes.

The use of appropriate and skilled handling is essential to ensure that all procedures are carried out efficiently to the animals.

Aims:

Applying proper handling methods of laboratory animals

Materials:

Mice

Rats

Gloves

Procedures of handling and restraint

Although there are significant species differences when handling and restraining a laboratory animal, there are several important concepts that apply equally to all species. These include:

1. Handle animals gently but firmly.
2. Approach an animal slowly but purposefully.
3. Wear disposable gloves.
4. Always wash your hands prior to and after handling animals, as odors of other species or blood is frequently distressing. Additionally, your hands can act as a means of spreading infectious agents from one group of animals to another.
5. Wear a clean laboratory coat or disposable gown. 6. Use an appropriate method.

Mice handling:

1. The tail of the mouse is gripped at its base and the mouse is lifted onto the grid cage top.
2. By gently pulling the tail backward, the animal tends to move forward and to hold on to the grid with its forelegs.
3. At this moment, the other hand approaches the rear of the neck and a skin fold, quite close to the ears, is grasped with the thumb and the forefinger, while the loose skin extending over the back is gripped with the other fingers.
4. It is important to grip the loose skin in the rear of the neck properly, in order to prevent the animals from turning its head and biting into the handler's fingers.
5. At the same time, care must be taken not to impair the animal's breathing and venous blood backflow from the head to the chest.
6. By turning the hand upwards, the mouse is positioned with its ventral side uppermost.
7. The tail is then gripped between the third finger and the ball of the thumb.
8. The head and body of the animal are brought into a straight and comfortable position with its back being supported by the palm of the hand.
9. In this position the mouse is held safely for any further manipulations

Rats handling:

Proper method of Handling

1. The rat is grasped from its **tail**.
2. Its placed on a hard surface.
3. The left hand is slipped over the **rat`s back & is move toward the head**
4. The thumb finger is then sledded under the rat chin
5. The right front paw of the rat is restrained between the base of the thumb & the index finger
6. The body is continuously kept **tight by holding the tail**.

Rabbits handling:

Proper technique when handling rabbits is essential to prevent the animal from accidentally breaking its back, a common outcome associated with inappropriate rabbit handling.

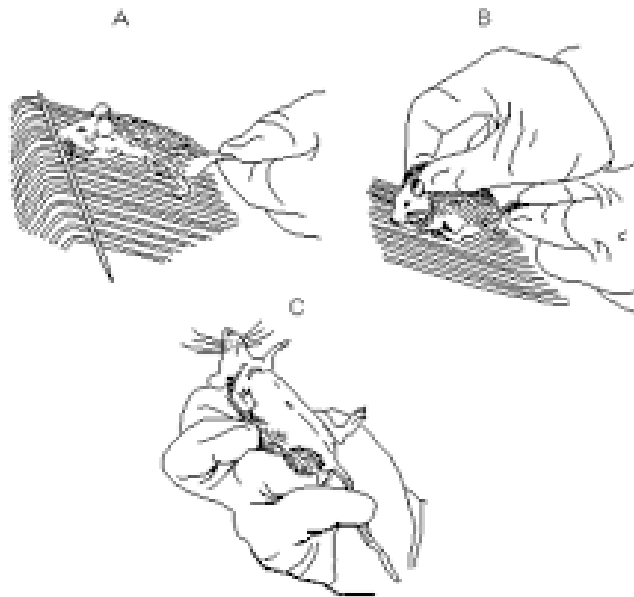
1. Rabbits should be removed from their cage by grasping the excess skin over the dorsal cervical region.
2. Rabbits should never be picked up by their ears.
3. The rabbit's hind end must be supported as it is removed from its cage.

If not supported properly, the rabbit may kick with its powerful hind limbs, inducing lumbar vertebral dislocation or fracture (broken back).

Rabbits can be moved for short distances by permitting the animal to bury its head at the junction of your body and your bent elbow, supporting the animal's body with your forearm while putting gentle downward pressure over the animal's back with your other hand.

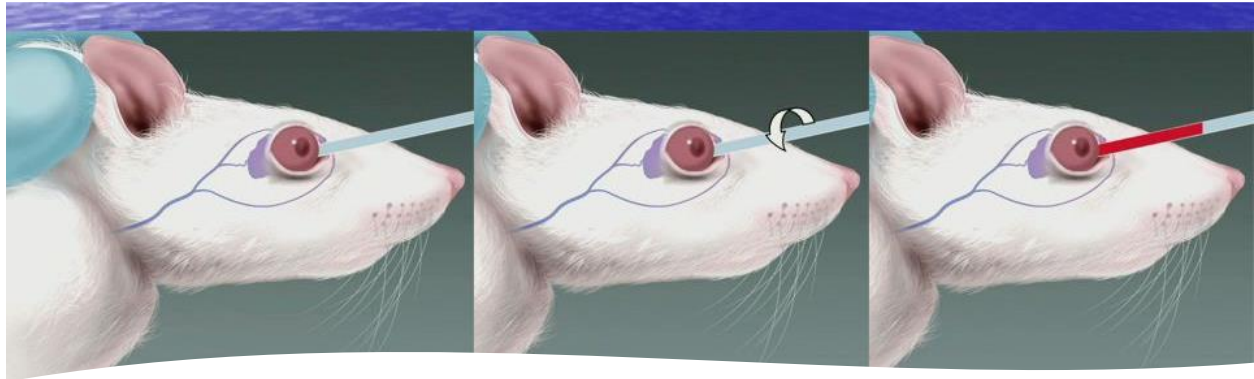
Results:

Proper handling of different types of laboratory animals.





Blood Collection From Retro-Orbital Sinus in Mouse

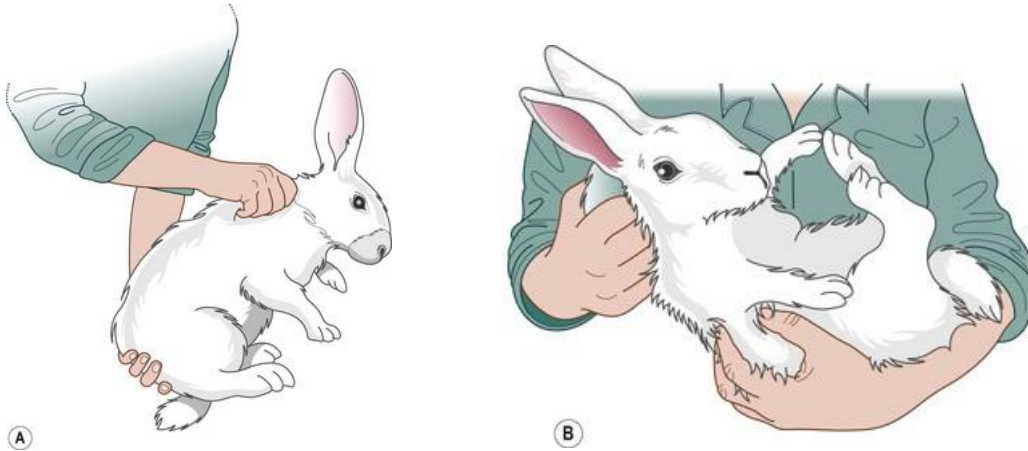


- Animals should be anesthetized prior to performing the procedure
- With a gentle rotating motion, insert the tube through the sinus membrane
- Continue rotating the tube at the back of the orbit until blood flows

Rats:



Rabbits:



Blood Collection From Rabbits



- **Insert needle into the ear vein with needle tip surface face up.**
- **Apply clip on the top of the cotton ball for 2-3 minutes to stop further bleeding**

Conclusion:

By the end of the lab, students should probably handle different types of laboratory animals.

Experiment 2: Intraperitoneal injection of some cholinergic agonist drugs in mice

Introduction:

Pilocarpine is a muscarinic cholinergic agonist that increases body secretions (saliva, tears, etc.) as well as increases GIT motility producing diarrhea in mice.

Aim:

Investigate the pharmacological effects of Pilocarpine on laboratory experimental animals (mice)

All students should apply probably intraperitoneal injection in mice

Materials:

- Mice
- Pilocarpine preparation (dose 25mg/kg)
- Digital balance
- Syringes (1ml)
- Gloves

Procedures:

1. Animals should be handled as discussed in previous laboratory
2. Observe animals before injection and record your findings in the provided sheet
3. Record the animal weight in gm
4. Calculate proper drug dose according to pilocarpine concentration in the prepared solution, the dose will be calculate according to the following formula: (animal wt. in gm/100).
5. Inject the calculated dose of the drug ip. In the provided mouse



6. Observe animals after injection for any changes

Results

Record any changes in animals in the provided sheet

Conclusion

Pilocarpine increases body secretions like:

- Saliva
- Tears
- Urination
- Defecation (soft stool)

Observation of Experimental Animal Sheet

Biological Function	Before Administration	After Administration
Vitality	Normal	Stimulated, depressed, or unchanged
Excitability	Normal	Stimulated, depressed, or unchanged
Gait	Normal	Normal, staggering
Reflexes: Righting reflex Touch Pain	Normal	Present, or lost
Eye: Pupil diameter Lacrimation	Normal Normal	Normal, mydriasis, or miosis. Normal or increased.
Secretions	Normal	Increased or decreased.
Defecation & Micturation	Normal	diarrhea, polyuria or no change.
Heart Rate/Minute	Normal	Increased, decreased, no change
Respiratory Rate/Minute	Normal	Increased, decreased, no change
C.N.S. Symptoms	Normal	Sedation, hypnosis, convulsions
Other characteristic signs Post-mortem Examination:	Heart, Liver, G.I.T., Lungs	